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10/699,881

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Darwin Hu

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26797 7590 11/12/2008  
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EXAMINER

STOREY, WILLIAM C

ART UNIT

PAPER NUMBER

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/699,881	<b>Applicant(s)</b> HU, DARWIN	
	<b>Examiner</b> WILLIAM C. STOREY	<b>Art Unit</b> 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 36-38 is/are pending in the application.
- 4a) Of the above claim(s) 2,6,8,10,15 (and dependents) is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-21 and 36-38 is/are rejected.
- 7) ☒ Claim(s) 37-38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2008 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Note to Applicant***

- Please address all issues raised. It has been noted that some issues previously raised have not been adequately addressed, if at all.
- In addition, the examiner notes the limited status of support for double-sided scanning presented in the specification. Please stay within the bounds of the limited support provided for double-sided scanning presented in the specification at the time of original filing, and provide ***specific*** support for the introduction of any newly-submitted material (amendments, drawings, etc.) pertaining to double-sided scanning. Please do not submit any new matter.
- Further, the examiner notes that it may be difficult to provide drawings based off of material with limited support in the specification as of the original filing. Often, drawings will by their nature incorporate unsupported assumptions, even though this may not be the intent of the creator of the drawings.
- For reference, no software may be claimed as an invention.

### ***Drawings***

1. The drawings were received on 8/8/08. These drawings are not acceptable. As such, they will not be entered as presented. Assumptions that are not warranted from the specification as originally filed have been added as new matter within the drawings.

The amendment filed 8/8/08 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment

shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

- i. For double-sided scanning, it has been discussed that the specification dictates that the two CIS modules are displaced horizontally from each other (pg. 5, line 3 to pg. 5, line 19, for example). The sensor modules in Fig. 8a are not disposed horizontally with respect to each other. As Fig. 8b is based off a reception of the scenario of fig. 8a, it too is not acceptable.
- ii. There is not support in the specification as of the original filing for the actions depicted Fig. 8B (for example, showing line scans of images being stacked on top of each other, or having it act in a way to divide the responses of the sensors based on the scenario of fig. 8a).
- iii. It has been discussed that the specification specifies that the double sided CIS modules operate sequentially; however, the figures depict the operation occurring at the same time (not sequentially).

Applicant is required to cancel the new matter in the reply to this Office Action.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. The limitations of claim 7 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of the 2<sup>nd</sup> & 6<sup>th</sup> claim, incorporating all of the limitations of the first claim, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of claim 36 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of and inherited by claim 9 (for example, the scanning modules operating at the same time and sequentially) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “concatenated” contact image-sensing module with at least first and second contact image sensor modules, each connected in series, positioned facing towards each other to scan both sides of an object inserted between the first and second contact image sensor modules, as well as the modules triggered sequentially with respect to each other must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.



7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of and inherited by claim 15 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

8. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of claim 36, such as the positioning of the sensor modules and the triggering of the modules for

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double-sided scanning must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Response to Amendment***

1. The amendment filed 8/8/08 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

a. Because the drawings have not been accepted (see above), the amendments to the specification with respect to the drawings should not be entered.

b. Thus, the only accepted changes to the specification under the "Amendments to the Specification" are #1, which changes oppositely back to horizontally, and #3.

Applicant is required to cancel the new matter in the reply to this Office Action.

***Election/Restrictions***

2. Newly (from amendments to the claims directly or in the dependency structure) submitted claims 2, 6, 8, 10, 15 (and dependents) are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Even though it has been previously discussed that there is no support for simultaneous double-sided scanning (and such a rejection still stands presently), such a claim (if taken anyway) was presented prior, and as such due to new amendments, a scenario of scanning sequentially pertains to a different embodiment. (i.e. if end pulses trigger the readings, then the readings are sequential, not simultaneous or at the same time, etc.). This does not validate the previously, and continued, rejections based on lack of support & new matter for simultaneous double-sided scanning.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 2, 6, 8, 10, 15 (and dependents) are

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withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Specification***

3. The disclosure is objected to because of the following informalities: At pg. 11, line 3, it appears that the analog switch 407 appears in Fig. 6, not Fig. 4.

Appropriate correction is required.

***Claim Objections***

4. Claim 37 is objected to because of the following informalities: "So that" is repeated twice in a row. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 7, 9, & 37-38 (and dependents) are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim says that the two modules scan both sides of the object simultaneously; however, this is in direct contradiction with the specification which reads that in respect to the case of a double-sided document (pg. 12, line 24 of original filing), "contact image-sensing modules operate sequentially" (pg. 13, line 1 of original filing). The specification does not say

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that the scanning modules operate simultaneously, but rather, sequentially (one after another). “At the same time” is the same as simultaneously.

5. Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Please provide support without the addition of any new matter as of the original filing for the “concatenated” contact image-sensing module with at least first and second contact image sensor modules, each connected in series, positioned facing towards each other to scan both sides of an object inserted between the first and second contact image sensor modules, as well as the modules triggered sequentially with respect to each other.

11. Claims 2, 6, and 15 (and dependents) is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification as of the original filing for a double-sided scanning scenario that uses end pulse triggers.

12. Claim 1 & 8 (and dependents) is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to

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reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support for an object inserted between the first and second contact image sensor modules, wherein the first and second contact image sensor modules are positioned facing towards each other to scan both sides of the object. The specification merely states the gist of that double-sided scanning is accomplished by two series of contact image sensors, or modules, one of which is disposed horizontally with respect to the other one, and both of which are operated sequentially.

6. Claim 15 (and dependents) is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Please show support for duplex scanning with two modules scanning both sides as described in claim 8, wherein the second module outputs an end pulse to a subsequent contact image sensor module (since claim 15 incorporates the possibility of this).

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 (and dependents and claims with similar limitations) is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claim 7 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the reply filed

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8/8/08. In that paper, applicant has stated on pg. 13 that "Upon receiving a start pulse, a first image sensing module starts a first scanning operation. When the first scanning operation is done, a second image sensing module is caused to start a second scanning operation," and this statement indicates that the invention is different from what is defined in the claim(s) because claim 7, which is dependent on claim 1, states that both sides are scanned simultaneously, not sequentially, as just outlined by the applicant in the cited remarks.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1, 5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 20040252355) in view of admitted prior art and Rasmusen, as well as Shiraishi (US 7248378), Lockwood (US 4743974), and Sahlin ("How to do Everything with Adobe Acrobat 5.0") for further (though, unnecessary) support.

Regarding claim 1, Chen discloses a method of operating a concatenated contact image-sensing module scanner (§21) to scan an object (§9 discloses scanning the front and back of a document (object)), the method comprising: providing a first contact image sensor module for executing a first document reading session through a trigger of a start pulse (§21 disclosed the system such as in fig. 1 to

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use contact image sensors for the modules. One of the top or bottom modules may thus read on contact image sensor module. As it had previously been disclosed that the system scans documents (document reading session), it is inherent that the contact image sensor receive some kind of start pulse as is well known for contact image sensors. In addition, providing further motivation is the applicants admitted prior art for a contact image sensor to have a start pulse input to it (fig. 2, lines 1-10), which acts as a trigger.),

and then the first contact image sensor module outputting a corresponding first scanned image signal (§ 9,10 disclose the scanning of a front and back side by two different scanning modules and signals are sent out from the reading of the document, thus, one of the front or back side image signal that was read may read on claimed first scanned image signal).;

providing a second contact image sensor module operatively connected to the first contact image sensor module (§ 9, 10 disclose that the two sensors are connected (operatively connected) for sending a signal from the top image-reading module to the bottom image-reading module) for executing a second document reading session (as disclosed above, the two modules each scan one side of the object) and then the second contact image sensor module outputting a corresponding second scanned image signal (disclosed previously),

wherein the first and the second contact image sensor modules are positioned facing towards each other to scan both sides of the object inserted between the first and second contact image sensor modules (Fig. 1-3 show general examples of the scanning



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modules. ¶9-10 discloses that the two modules simultaneously scan the front and the back sides of a document. Nonetheless, it would have been at least obvious to one of ordinary skill in the art at the time the invention was made to provide wherein the first and the second contact image sensor modules are positioned facing towards each other to scan both sides of the object inserted between the first and second contact image sensor modules for the purpose of providing quickness. For further (though not necessary) support, in a similar field of endeavor, Shiraishi discloses duplex scanning. Shiraishi discloses two sensors for simultaneously duplex scanning both sides of a document (abstract, fig.2). In addition, Shiraishi discloses the two sensors for scanning both sides disposed opposed to each other. (In addition, for further support, Lockwood discloses a similar system where two sensors are disposed facing towards each other for duplex scanning (fig. 2 (elements 32, 34)).) Further, though Shiraishi discloses that one sensor is embodied as a CCD and the other as a contact image sensor; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide both sensor units as contact image sensors for the purpose of at least further conserving space (col. 1, lines 39-40, col. 2, lines 7-14). In addition, from fig. 2, in case it would be claimed that the two sensor modules may not be directly face-to-face, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide both sensor modules directly face-to-face in order to have greater symmetry, speed, and/or ability to compare the merit of the two sensor modules against each other.),

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the first and the second scanned image signals are selected to be outputted sequentially (§20 discloses that the bottom circuit may output the digital front-side signal and the digital back-side signal in sequence) via an interface to a computing device (§15 discloses the outputs for the front and back side images to be send to an image processing device such as a computer. Inherently, the transmission must be done via an interface to a computing device.)

However, Chen did not distinctly disclose the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object.

In a similar field of endeavor, Rasmusen discloses stitching together images from multiple contact image sensors. In addition, Rasmusen discloses §14 & 15 disclose the stitching being done from multiple contact image sensors. §16, 19, 20, 44 disclose stitching being done by copying pixel values in an array stored in computer memory and appending on pixel values from a second sensor into a combined array of image data for two sensors together. This could obviously be repeated many times over in order to cover more area. In addition, Rasmusen also teaches correction due to overlapping pixels, which occur in order to make for a better stitch, however, as the overlapping arrangement provides an improvement, and as the correction is merely for the improvement, it would have been obvious to one of ordinary skill in the art at the time the invention was made to not have the improvement and simply copy output data from one sensor onto the end of data corresponding with the previous sensor to provide greater simplicity. In addition, though Rasmusen does not distinctly disclose that the

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image signals are output through a computer interface to a computing device that uses software to complete the operation, the examiner maintains that it was well known in the art to do so. Chen disclosed the image signals being output sequentially. Sending picture information from sensors to a computer via a computer interface to interact with software is well known to those of ordinary skill in the art for the purpose of being able to modify the image in a user environment and to be able to see the picture reading output visually. In addition, Rasmusen discloses the stitched and separate image information stored in a *computer* storage medium (§16). In addition, it is well known to those of ordinary skill in the art to use hardware implementation for software processing and vice versa, so that if the invention of Rasmusen is implemented with hardware processing, the computational processing provided by the hardware could be implemented by software in order to allow for cheaper mass distribution of the processing application. In addition, a software module that acts in conjunction with the hardware is well known to be used.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by specifically providing the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object, as taught by Rasmusen, for the purpose of allowing for the picture data from the multiple sensors to be combined into the full image in order to be able to view a document in its original state.

Further supporting the fact that it would have been well known to one of ordinary skill in the art at the time the invention was made to have a software module integrate a first and a second scanned image signal to recover an image of the object (even considering the applicant's assumption that one of ordinary skill would believe an "image of the object" to constitute two separate images (see applicant's remarks (end of pg. 13 & top of pg. 14)), Sahlin provides a software module (Adobe Scan Plug-in. Adobe Acrobat (of which Sahlin discusses) is itself software.) that may append images together, and may utilize double-sided scanning in transferring images from a scanner (pg. 184 in particular of pg. 182-185). Though it shown having a user operate the program, it would have been obvious to one of ordinary skill in the art to simply automate such processes in order for greater ease, efficiency, and/or speed. Thus multiple scanned images integrated together into a document or pdf image may read on claimed "image of the object." In addition, it would have been obvious to one of ordinary skill in the art to save a collection of images together in a different file name, such as one more often associated with images, for the purpose of providing greater flexibility.

Regarding claim 5, the claim inherits everything as applied above for claim 1. Chen discloses at ¶17 and ¶20 a clock generator for controlling the image reading operation of the modules (one of which would be the first contact image sensor module). In addition, inherently, there must be a start pulse to initiate a reading session, and inherently, the start pulse must come from somewhere. As the pulse controls the time at which the reading is started, the source of the start pulse may be called a timing generator.

Regarding claim 7, the claim is rejected based upon similar reasoning as applied above for claim 1. Inherently, a document for scanning has a front and back side. The sensors were discussed as facing each other; therefore, they are directly face to face. The images from the sensors would be of the front and back of the document (object). It was disclosed how the images may be combined. In addition, it would have been at least obvious to one of ordinary skill in the art at the time the invention was made to provide scanning both sides simultaneously in order to provide a reduction in total overall scanning time as well as allowing for a greater ability to compare the merit between the two sensor modules.

9. Claims 2, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the previous disclosures as applied to claims 1 above, and further in view of Kawahara et al. (US 6327057), hereinafter referred to as Kawahara.

Regarding claim 2, the claim inherits everything as applied above for claim 1. The previous disclosures may not have distinctly disclosed a first end pulse outputted from the first image sensor module to the second contact image sensor module for triggering an execution of the second document reading session; however, in a similar field of endeavor, Kawahara discloses scanning with contact type linear image sensors. In addition, Kawahara discloses a first end pulse outputted from the first image sensor module to the second contact image sensor module for triggering an execution of the second document reading session (figure 1b and column 2, lines 22-25). It would have been obvious to follow the same idea of waiting for the completion of one module before starting the next in order to provide a greater degree of protection against any kind of

distortion that may occur while scanning (if the two modules are scanning at once, this would provide a greater chance of distortion occurring than if the modules were not).

Regarding claim 6, the claim is rejected based upon similar reasoning as applied above for claim 2. The document reading session may be the same as the reading sessions with respect to the modules.

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the previous disclosures as applied to claim 1 above, and further in view of Hasegawa et al. (US 6678076), hereinafter referred to as Hasegawa; and Yokochi (20040012830).

Regarding claim 3, the claim inherits everything as applied above for claim 1. However, the previous disclosures may not have distinctly disclosed an analog switch for receiving the first and the second scanned image signals.

In a similar field of endeavor, Hasegawa discloses a switch controlling output. In addition, Hasegawa discloses an analog switch for receiving the first and the second scanned image signals (fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures by specifically providing an analog switch for receiving the first and the second scanned image signals, as taught by Hasegawa, for the purpose of providing more control. In addition, without a reference, it would have been obvious to provide a switch for more control.

In addition, the previous disclosures did not distinctly disclose wherein the analog switch further includes an internal counter therein, and the internal counter sets a

predetermined period of time in order to have the analog switch to select and output one of the first and the second scanned image signals in a sequential manner.

In a similar field of endeavor, Yokochi discloses control of a selector for image data output from multiple sources; the selection signal switched based on a predetermined time. In addition, Yokochi discloses at ¶89, fig. 1 a selector switching which input of image data to output. The multiple inputs are outputs from a CCD sensor (first and second scanned image signals). ¶92 discloses the outputs of the CCD sensor being pixel signals, which is commonly known to regard image signals. CCDs are well known to scan images. The selector is switch based on a command output every predetermined time. A predetermined time is inherently set because it is predetermined. Although Yokochi did not distinctly disclose an internal counter for setting a predetermined time, it is well known for devices to have an internal counter (internal counter), and as an external counter is taught (for the predetermined time), a box may be drawn around anything and, thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a counter being internal for the purpose of having a nice interconnected package without the need for an extra external connection for a counter. The selector selects and outputs one of the CCD outputs at a time, and thus, the signals are selected and output in a sequential manner.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures by specifically providing wherein the analog switch further includes an internal counter therein and the internal

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counter sets a predetermined period of time in order to have the analog switch to select and output one of the first and the second scanned image signals in a sequential manner, for the purpose of providing more control. In addition, without a reference, it would have been obvious to provide a switch for more control.

15. Claims 4 rejected under 35 U.S.C. 103(a) as being unpatentable over the previous disclosures in view of well known prior art (MPEP 2144.03).

Regarding claim 4, the previous disclosures disclose everything claimed, as applied above (see claim 1); however, the previous disclosures did not distinctly disclose the interface being a USB interface. However, the examiner takes official notice of the fact that it was well known in the art to provide an interface being a USB interface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures by specifically providing an interface being a USB interface, for the purpose of conforming to a common standardized peripheral device interface with a computer, that provides ease, convenience, and/or flexibility.

10. Claims 8-12 & 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 20040252355) in view of admitted prior art and Rasmusen, as well as Shiraishi (US 7248378), Lockwood (US 4743974), Kawahara et al. (US 6327057), hereinafter referred to as Kawahara; and Sahlin ("How to do Everything with Adobe Acrobat 5.0"), for further support.



Regarding claim 8, Chen discloses a concatenated contact image-sensing module having at least first and second contact image sensor modules (fig. 1-3, ¶¶9-10 show and/or depict two modules), each operatively connected to another in series (fig. 1-3 show the modules operatively connected in series);

And a timing generator, providing a clocking signal to each of the first and second contact image sensor modules (fig. 2, ¶¶24 disclose a clock generator (may read on claimed timing generator) that provides a clock signal (clocking signal) to each of the modules) positioned facing towards each other to scan both sides of an object inserted between the first and second contact image sensor modules (Fig. 1-3 show general examples of the scanning modules. ¶¶9-10 discloses that the two modules simultaneous scan the front and the back sides of a document. Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide wherein the first and the second contact image sensor modules are positioned facing towards each other to scan both sides of the object inserted between the first and second contact image sensor modules for the purpose of providing quickness. For further (though not necessary) support, in a similar field of endeavor, Shiraishi discloses duplex scanning. Shiraishi discloses two sensors for simultaneously duplex scanning both sides of a document (abstract, fig.2). In addition, Shiraishi discloses the two sensors for scanning both sides disposed opposed to each other. (In addition, for further support, Lockwood discloses a similar system where two sensors are disposed facing towards each other for duplex scanning (fig. 2 (elements 32, 34)).) Further, though Shiraishi discloses that one sensor is embodied as a CCD and the other as a

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contact image sensor; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide both sensor units as contact image sensors for the purpose of at least further conserving space (col. 1, lines 39-40, col. 2, lines 7-14). In addition, it appears from fig. 2, that the two sensor modules may not be considered positioned facing towards each other. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide both sensor modules positioned facing towards each other (possibly similar to Lockwood) in order to have greater symmetry, speed, and/or ability to compare the merit of the two sensor modules against each other. In addition, it would have been obvious due to predictable results and/or designer's choice.), for providing a start pulse into the first contact image sensor module to trigger a first document reading session thereof and output a first scanned image signal, wherein the second contact image sensor module is caused to perform a second document reading session once triggered and outputting a second scanned image signal (§24 disclosed how the clock signal controlled the reading operations of the image-sensing modules. As such, since it would control the reading, the clock signal may act as a start pulse for controlling the starting of the reading. Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a start pulse being provided into the first and/or second module for the purpose of providing greater control (such as when the reading is started). In addition, it is inherent that a start pulse be provided to a reading module in order for the module to start. A box for a name may be drawn around anything; and thus, whatever generates a start pulse (inherently, something must

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generate a start pulse) in combination with, or if the clock generator provides it itself, may be titled timing generator. For further support, Kawahara discloses a means of controlling contact image sensor modules. Fig. 1b (or 2b) shows a way of controlling CIS sensors. A CLK (clock signal) is provided from the same source to multiple sensors (as has been shown as done from Chen for double-sided scanning sensor modules. In addition, a start pulse SI is provided to a first sensor (may read on claimed first contact image sensor module for the purposes of generic layout) (col. 2, lines 5-10, fig. 1a-1b, disclose a start pulse input SI). In addition, figure 1b, col. 2, lines 1-17 disclose start input si and output so. Fig. 1b (or 2b) shows the so from a preceding sensor acting as a start pulse for the following sensor. This scenario would read on claimed wherein the second contact image sensor module is caused to perform a second document reading session once triggered. Figure 1b and column 2, lines 22-25 disclose outputting scanned image signals (would read on claimed output a first and/or second scanned image signal). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide using a clock/start pulse scheme similar to that provided by Kawahara for the purpose of allowing for control and/or reduction of power consumption. (In such a set up, the module on one side of the document may be connected like, and act as, a sensor in fig. 1b (or 2b), as connected to another sensor/module on the other side of the document. Further, the output of the image signal, or start pulse, accordingly, may be every line or another amount less than a full side of the document, in order to provide greater flexibility and/or speed.) (However, the

scenario with Kawahara is unnecessary, and is provided as another way of approaching the situation and/or for further support that the limitation is obvious.)), wherein the first and the second contact image sensor modules are triggered sequentially (discussed previously (for example, if a line was scanned and then output, then the next module triggered, this would be sequential. In addition, it would have been obvious to follow the same idea of waiting for the completion of one module before starting the next in order to provide a greater degree of protection against any kind of distortion that may occur while scanning (if the two modules are scanning at once, this would provide a greater chance of distortion occurring than if the modules were not).) In addition, Chen discloses at ¶¶9-11, fig. 2 that one module may be in a feeder and another in a flatbed portion of the system. From this, one skilled in the art may assume that the two modules would be displaced by some distance. In addition, Shiraishi (possibly incorporating a layout such as Lockwood in Fig. 2, as described previously) provides two scanners close, but at a slight displacement. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide triggering the modules sequentially for the purpose of conservation (if a first module would not be efficiently used for scanning the document until a certain displacement, or time, after the first module is used to scan the document).

and the first and the second scanned image signals are selected to be outputted sequentially (¶20 (of Chen) discloses that the bottom circuit may output the digital front-side signal and the digital back-side signal in sequence) via an interface to a computing device (¶15 discloses the outputs for the front and back side images to be send to an

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image processing device such as a computer. Inherently, the transmission must be done via an interface to a computing device.)

However, Chen did not distinctly disclose the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object.

In a similar field of endeavor, Rasmusen discloses stitching together images from multiple contact image sensors. In addition, Rasmusen discloses ¶¶14 & 15 disclose the stitching being done from multiple contact image sensors. ¶¶16, 19, 20, 44 disclose stitching being done by copying pixel values in an array stored in computer memory and appending on pixel values from a second sensor into a combined array of image data for two sensors together. This could obviously be repeated many times over in order to cover more area. In addition, Rasmusen also teaches correction due to overlapping pixels, which occur in order to make for a better stitch, however, as the overlapping arrangement provides an improvement, and as the correction is merely for the improvement, it would have been obvious to one of ordinary skill in the art at the time the invention was made to not have the improvement and simply copy output data from one sensor onto the end of data corresponding with the previous sensor to provide greater simplicity. In addition, though Rasmusen does not distinctly disclose that the image signals are output through a computer interface to a computing device that uses software to complete the operation, the examiner maintains that it was well known in the art to do so. Chen disclosed the image signals being output sequentially. Sending picture information from sensors to a computer via a computer interface to interact with

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software is well known to those of ordinary skill in the art for the purpose of being able to modify the image in a user environment and to be able to see the picture reading output visually. In addition, Rasmusen discloses the stitched and separate image information stored in a *computer* storage medium (§16). In addition, it is well known to those of ordinary skill in the art to use hardware implementation for software processing and vice versa, so that if the invention of Rasmusen is implemented with hardware processing, the computational processing provided by the hardware could be implemented by software in order to allow for cheaper mass distribution of the processing application. In addition, a software module that acts in conjunction with the hardware is well known to be used.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by specifically providing the outputs being sent via an interface to a computing device that executes a software module to integrate the first and the second scanned image signals to recover an image of the object, as taught by Rasmusen, for the purpose of allowing for the picture data from the multiple sensors to be combined into the full image in order to be able to view a document in its original state.

Further supporting the fact that it would have been well known to one of ordinary skill in the art at the time the invention was made to have a software module integrate a first and a second scanned image signal to recover an image of the object (even considering the applicant's assumption that one of ordinary skill would believe an "image of the object" to constitute two separate images (see applicant's remarks (end of

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pg. 13 & top of pg. 14)), Sahlin provides a software module (Adobe Scan Plug-in. Adobe Acrobat (of which Sahlin discusses) is itself software.) that may append images together, and may utilize double-sided scanning in transferring images from a scanner (pg. 184 in particular of pg. 182-185). Though it shown having a user operate the program, it would have been obvious to one of ordinary skill in the art to simply automate such processes in order for greater ease, efficiency, and/or speed. Thus multiple scanned images integrated together into a document or pdf image may read on claimed "image of the object." In addition, it would have been obvious to one of ordinary skill in the art to save a collection of images together in a different file name, such as one more often associated with images, for the purpose of providing greater flexibility.

Regarding claim 9, the claim inherits everything as applied above for claim 8. From at least the previous mention of fig. 2 of Shiraishi and/or Lockwood, it would appear that two sensor modules are provided as disposed face to face "directly" to scan both sides. However, in case it would be claimed that the two sensor modules may not be "directly" face-to-face, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide both sensor modules directly face-to-face in order to have greater symmetry, speed, and/or ability to compare the merit of the two sensor modules against each other. The claim also contains the limitation that both sides of the object are scanned at the same time by the modules, as well as the inherited limitation that the modules are triggered sequentially (which was previously addressed). References such as Chen (¶9), Shiraishi (abstract, for example), and Lockwood (describes "substantially simultaneously," col. 3, lines 1-18) disclose

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"simultaneous" scanning of both sides. Thus, at least one of the references would provide for reading of both sides of the object at the same time. In addition, this would be obvious in order to provide greater efficiency and speed. Another way that the limitation may be read on is by the fact that the scanning of both sides may occur at the same "transport time," not necessarily the "complete time match" (provided by Shiraishi col. 6, lines 57). A transport time may read on claimed time; thus, "same time" may be read upon. Additionally, Shiraishi discloses sequential read times of the double-sided original, as well as the reading being simultaneous, thus further providing congruence with the claim's limitations (col. 5, lines 32-37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide scanning both sides at the same transport time for the purpose of providing greater efficiency and/or speed (as opposed to not having it done at the same transport time, or time).

Regarding claim 10, the claim inherits everything as applied above for claim 8. Considering the previous discussions of how the modules may be triggered sequentially, this may provide for the current claim's limitations of document reading sessions for the modules taking place sequentially (if one module is started to read sequentially (triggered), then inherently, the start of the reading session (may be when the module is triggered), and thus, the document reading session, would take place at a sequential period in time.) Nonetheless, it would have been obvious to have the document reading sessions of the sensor modules take place sequentially in order to provide a greater degree of protection against any kind of distortion that may occur



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while scanning (if the two modules are scanning at once, this would provide a greater chance of distortion occurring than if the modules were not).

Regarding claim 11, the claim inherits everything as applied above for claim 8. Chen discloses at ¶¶20, ¶24, and fig. 2 analog-to-digital converters (at least one) for receiving first and second scanned image signals from the respective reading session and converting the image signals into digitalized forms.

Regarding claim 12, the claim inherits everything as applied above for claim 11. ¶¶20, ¶24, and fig. 2 provide that the bottom circuit processes the digital images to produce new digital signals. Inherently, as the processing deals with digital images, there must be a "processor" to this, and it may be called a "digitalized" image processor as it deals with digital images.

Regarding claim 15, the claim inherits everything as applied above for claim 8. It was disclosed above how Kawahara teaches how different modules may be triggered sequentially, by outputting an end pulse that acts as the start pulse for a next module. Kawahara discloses a first end pulse outputted from the first image sensor module to the second contact image sensor module for triggering an execution of the second document reading session (figure 1b and column 2, lines 22-25). It would have been obvious to follow the same idea of waiting for the completion of one module before starting the next in order to provide a greater degree of protection against any kind of distortion that may occur while scanning (if the two modules are scanning at once, this would provide a greater chance of distortion occurring than if the modules were not). Obviously, one of ordinary skill in the art would recognize that the process could be

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repeated for more sensor modules if there are any, for the purpose of providing greater flexibility and/or because of predictable results.

Regarding claim 16, the claim inherits everything as applied above for claim 8. It was disclosed in claim 8 sending the output via a computer interface. This reads on the claim.

16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the previous disclosures as applied to claim 8 above, and further in view of Hasegawa et al. (US 6678076), hereinafter referred to as Hasegawa.

Regarding claim 13, the claim inherits everything as applied above for claim 8. Kawahara disclosed an analog switch used to output the contact image sensor's outputs. However, Hasegawa may provide an example more suited to the invention described in the specification.

In a similar field of endeavor, Hasegawa discloses a switch controlling output. In addition, Hasegawa discloses an analog switch operatively connected to the first and the second contact image sensor modules for receiving the first and the second scanned image signals (fig. 3). Hasegawa discloses selecting and then outputting one of the first and the second scanned image signals (col. 6, lines 43-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara, Rasmusen, and Chen by specifically providing an analog switch operatively connected to the first and the second contact image sensor modules for receiving the first and the second scanned image signals,

and selecting and then outputting one of the first and the second scanned image signals., as taught by Hasegawa, for the purpose of providing greater control.

11. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over the previous disclosures as applied to claim 13 above, and further in view of Yokochi (20040012830).

Regarding claim 14, the claim inherits everything as applied above for claim 13. However, the previous disclosures may not have distinctly disclosed an analog switch for receiving the first and the second scanned image signals.

In a similar field of endeavor, Yokochi discloses control of a selector for image data output from multiple sources; the selection signal switched based on a predetermined time. In addition, Yokochi discloses at ¶89 a selector switching which input of image data to output. The multiple inputs are outputs from a CCD sensor (first and second scanned image signals). ¶92 discloses the outputs of the CCD sensor being pixel signals, which is commonly known to regard image signals. CCDs are well known to scan images. The selector is switch based on a command output every predetermined time. A predetermined time is inherently set because it is predetermined. Although Yokochi did not distinctly disclose an internal counter for setting a predetermined time, it is well known for devices to have an internal counter (internal counter), and as an external counter is taught (for the predetermined time), a box may be drawn around anything and, thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a counter being internal for the purpose of having a nice interconnected package without the need for an

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extra external connection for a counter. As the disclosure of Yokochi says that the signal is switched and outputted every predetermined time, it is inherent that a signal is selected and output within the predetermined period of time duration.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures by specifically providing wherein the analog switch further includes an internal counter for setting a predetermined period of time in order to select and then output one of the first and the second scanned image signals within the predetermined period of time duration, as taught by Yokochi, for the purpose of providing more control. In addition, without a reference, it would have been obvious to provide a switch for more control.

12. Claims 17, 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the previous disclosures as applied to claim 8 above, and further in view of well known prior art (MPEP 2144.03).

Regarding claim 17, the previous disclosures disclose everything claimed, as applied above (see claim 8); however, the previous disclosures did not distinctly disclose the interface being a USB interface. However, the examiner takes official notice of the fact that it was well known in the art to provide an interface being a USB interface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures by specifically providing an interface being a USB interface, for the purpose of conforming to a common

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standardized peripheral device interface with a computer, that provides ease, convenience, and/or flexibility.

Regarding claim 18, the previous disclosures disclosed everything claimed, as applied above (see claims 8); however, the previous disclosures failed to disclose a light source to illuminate the object. However, the examiner takes official notice of the fact that it was well known in the art to provide a light source to illuminate the object.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures by specifically providing a light source to illuminate the object, for the purpose of using providing a light source for light-receiving elements that read picture information, and to allow for greater imaging and picture quality.

Regarding claims 19, the previous disclosures disclosed everything claimed, as applied above (see claim 18); however, the previous disclosures failed to disclose wherein the light source is a colorful or monochromatic visible light. However, the examiner takes official notice of the fact that it was well known in the art to provide wherein the light source is a colorful or monochromatic visible light.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures by specifically providing wherein the light source is a colorful or monochromatic visible light, for the purpose of providing a well known light source for the motivation described above and allowing for greater quality assurance by a user being able to see whether the light source is on and/or capable of working.

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17. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the previous disclosures as applied to claim 18 in view of Apperson et al. (US 6079624), hereinafter referred to as Apperson.

Regarding claims 20 & 21, Kawahara discloses everything as applied above for claim 18 & 20, respectively. However, Kawahara fails to disclose the light source as an invisible light: as an infrared or ultraviolet light. However, the examiner maintains that it was well known in the art to provide the light source as an invisible light: as an infrared or ultraviolet light, as taught by Apperson.

In a similar field of endeavor, Apperson discloses a data processing form using a scanning apparatus. In addition, Apperson discloses the light source as an invisible light: as an infrared or ultraviolet light. Apperson discloses using infrared light emitting diodes coupled with respective infrared sensors for use in a scanner (column 9, lines 12-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing the light source as an invisible light: as an infrared or ultraviolet light, as taught by Apperson, for the purpose of detecting marks or codes in a scan and providing greater versatility.

18. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara in view of Hasegawa et al. (US 6678076), hereinafter referred to as Hasegawa.

Regarding claim 36, Kawahara discloses an optical scanner comprising: a concatenated contact image-sensing module having a plurality of contact image sensor

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modules each operatively connected to another in series (column 2, lines 18-20 and figure 1b. More contact type linear image sensors could be connected in a similar fashion.); and a timing generator for providing a start pulse into an end contact image sensor module to trigger a corresponding document reading session thereof and output a corresponding image signal (column 2, lines 8-10, figure 1a and 1b. The clock signal sets a count or time for input of start and output of end signal. Alternately, a start pulse is disclosed as input in the system (col. 2, lines 6-8, fig. 1) starting scanning which is for the purpose of outputting a corresponding scanned image signal. Inherently, the start pulse must come from somewhere, that somewhere may be called a timing generator as it determines the time of starting.); and wherein the end contact image sensor module is located at one end of the series-connected contact image sensor modules (figure 1b). However, Kawahara fails to disclose wherein a portion of these CIS modules is placed to face one side of an object and another portion is placed to face the other side of the object; so that the optical scanner is capable of scanning a double sided document. However, the examiner maintains that it was well known in the art to provide wherein a portion of these CIS modules is placed to face one side of an object and another portion is placed to face the other side of the object; so that the optical scanner is capable of scanning a double sided document, as taught by Hasegawa.

In a similar field of endeavor, Hasegawa discloses an image reading apparatus. In addition, Hasegawa discloses wherein a portion of these CIS modules is placed to face one side of an object and another portion is placed to face the other side of the object; so that the optical scanner is capable of scanning a double sided document

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(figure 10 and column 9, lines 10-20. Elements 217 and 221 are contact type image sensors that scan the face-up and face-down portions of a page; thus arranged to face one side of an object (page) and the other side of the object.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara by specifically providing wherein a portion of these CIS modules is placed to face one side of an object and another portion is placed to face the other side of the object; so that the optical scanner is capable of scanning a double sided document, as taught by Hasegawa, for the purpose of automatically scanning both sides of a double-sided document, and providing greater flexibility, ease, and/or convenience.

13. Claims 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Rasmusen and possibly Sahlin ("How to do Everything with Adobe Acrobat 5.0").

Regarding claim 37, Chen discloses an optical scanner comprising: a first contact image sensor module (¶21 disclosed the system such as in fig. 1 to use contact image sensors for the modules. One of the top or bottom modules may thus read on contact image sensor module); a second contact image sensor module operatively connected to the first contact image sensor module in series (¶21 disclosed the system such as in fig. 1 to use contact image sensors for the modules. The other sensor may read on claimed second contact image sensor module. Fig. 1, ¶9,10 disclose that the image signal from the top module is connected and sent to the bottom circuit, which is operatively connected to the bottom module. The connection is in series.), wherein the first contact



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image sensor module is placed to face one side of an object and the second contact image sensor module is placed to face the other side of the object so that the optical scanner is capable of scanning a double sided document (It is inherent that the sensors are placed to face both sides of the object/document as claimed due to the disclosure of Chen at ¶¶9-11 & fig. 2, for example, that the two modules simultaneously scan a front and a back image of a document.), and wherein first scanned image signals from the first contact image sensor module and second scanned image signals from the second contact image sensor module are read out in sequence (¶20 discloses the back-side and front-side signals (image signals) are output (read out) in sequence.). Chen discloses in ¶15 that scanned image results of the two sides of a scanned document may be output to a computer (computing device).

However, Chen did not distinctly disclose the outputs being integrated in a computing device executing a software module to recover two images of the double sided object.

In a similar field of endeavor, Rasmusen discloses stitching together images from multiple contact image sensors. In addition, Rasmusen discloses ¶¶14 & 15 disclose the stitching being done from multiple contact image sensors. ¶¶16, 19, 20, 44 disclose stitching being done by copying pixel values in an array stored in computer memory and appending on pixel values from a second sensor into a combined array of image data for two sensors together. This could obviously be repeated many times over in order to cover more area. In addition, Rasmusen also teaches correction due to overlapping pixels, which occur in order to make for a better stitch, however, as the overlapping

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arrangement provides an improvement, and as the correction is merely for the improvement, it would have been obvious to one of ordinary skill in the art at the time the invention was made to not have the improvement and simply copy output data from one sensor onto the end of data corresponding with the previous sensor to provide greater simplicity. In addition, though Rasmusen does not distinctly disclose that the image signals are output through a computer interface to a computing device that uses software to complete the operation, the examiner maintains that it was well known in the art to do so. Chen disclosed the image signals being output sequentially. Sending picture information from sensors to a computer via a computer interface to interact with software is well known to those of ordinary skill in the art for the purpose of being able to modify the image in a user environment and to be able to see the picture reading output visually. In addition, Rasmusen discloses the stitched and separate image information stored in a *computer* storage medium (§16). In addition, it is well known to those of ordinary skill in the art to use hardware implementation for software processing and vice versa, so that if the invention of Rasmusen is implemented with hardware processing, computational processing provided by the hardware could be implemented by software in order to allow for cheaper mass distribution of the processing application. In addition, a software module that acts in conjunction with the hardware is well known to be used.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by specifically providing the outputs being integrated in a computing device executing a software module to recover two images of

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the double sided object, as taught by Rasmusen, for the purpose of allowing for the picture data from the multiple sensors to be combined into the full image in order to be able to view a document in its original state.

Further supporting the fact that it would have been well known to one of ordinary skill in the art at the time the invention was made to have a software module integrate a first and a second scanned image signal to recover an image of the object (even considering the applicant's assumption that one of ordinary skill would believe an "image of the object" to constitute two separate images (see applicant's remarks (end of pg. 13 & top of pg. 14))), Sahlin provides a software module (Adobe Scan Plug-in. Adobe Acrobat (of which Sahlin discusses) is itself software.) that may append images together, and may utilize double-sided scanning in transferring images from a scanner (pg. 184 in particular of pg. 182-185). Though it shown having a user operate the program, it would have been obvious to one of ordinary skill in the art to simply automate such processes in order for greater ease, efficiency, and/or speed. Thus multiple scanned images integrated together into a document or pdf image may read on claimed "image of the object." In addition, it would have been obvious to one of ordinary skill in the art to save a collection of images together in a different file name, such as one more often associated with images, for the purpose of providing greater flexibility.

Regarding claim 38, the claim inherits everything as applied above for claim 37. In addition, Chen discloses converting the read image signals of the sides of the document from analog form to digital form (¶9-10). Inherently, there must be at least one analog-to-digital converter in order to have these actions accomplished.

***Response to Arguments***

1. Applicant's arguments filed 8/8/08 have been fully considered but they are not persuasive.

The applicant seems to claim that based on the amendments, 112 issues, such as new matter should have been overcome. Other than this, no direct attention or response was provided to 112 issues individually. For example, it was previously recited how claims 7 & 37 are rejected because they claim the scanning modules operating simultaneously, while support was provided for the scanning modules operating sequentially. The claims still contain the problematic matter. No attention toward or defense against this has been provided by applicant. Therefore the claims stand rejected.

The applicant claims that it is "understood to those skilled in the art that the scanned image signal from the first and second image sensing modules must be integrated or processed to recover a complete image of the object, in which case two respective images of the double-sided document. However, the examiner respectfully disagrees that one skilled in the art would definitely take a "complete image of the object" to automatically mean two respective images of the double-sided document. The applicant is essentially saying "an image is two images," which the examiner disagrees would be the intuitive understanding of one skilled in the art.

2. Applicant's arguments with respect to the claims have been considered but many are moot in view of new ground(s) of rejection. Nonetheless, the examiner feels that it

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may be beneficial to address some issues that may possibly be relevant to the new grounds of rejection

Regarding the discussion for claim 1 (and dependents and similar claims), the substance of the applicant's first proposal regarding the claim(s) surrounds the idea that Chen fails to show that "the first and the second scanned image signals are selected to be outputted sequentially" because Chen only shows that the back-side signal SD2 is transferred from the top module 10 to the bottom module 20 for output. However, the examiner respectfully disagrees. It was presented on the previous office action and will be presented again that "the first and the second scanned image signals are selected to be outputted sequentially (§20 discloses that the bottom circuit may output the digital front-side signal and the digital back-side signal in sequence)." Having the signals output in sequence reads on claimed selected to be output sequentially.

Regarding the discussion for claim 1 (and dependents and similar claims), the substance of the applicant's second proposal regarding the claim(s) surrounds the idea that the amendments to claim 1 make Rasmusen irrelevant because Rasmusen teaches about stitching two images using the overlapping information. However, the examiner respectfully disagrees. Rasmusen discussing considering overlapping information is irrelevant. As it was previously discussed in the previous office action and is repeated once again, Rasmusen teaches integrating two images together, and this would have been an obvious combination. The fact that Rasmusen provides an improvement by having the ability to deal with overlapping content does not preclude one of ordinary skill in the art from realizing that it would have been obvious to simply

copy output data from one sensor onto the end of data corresponding with the previous sensor to provide greater simplicity.

Regarding the discussion for claim 8 (and dependents), the substance of the applicant's first proposal regarding the claim(s) surrounds the idea that claim 8 includes a timing generator that not only provides a clocking signal to each of the contact image sensor modules but also is configured to provide a start pulse to a first contact image sensor module to trigger a first document reading session thereof and output a first scanned image signal. However, the examiner wishes to point out that the language as presented in claim 8 does not definitively define the applicant's claimed limitations as just recited from the remarks (pg. 14). The examiner assumes the applicant is referring to this language from claim 8: "a timing generator, providing a clocking signal to each of the first and second contact image sensor modules positioned facing towards each other to scan both sides of an object inserted between the first and second contact image sensor modules, for providing a start pulse into the first contact image sensor module to trigger a first document reading session thereof and output a first scanned image signal." "For providing a start pulse" interjected in the language above does not definitively limit the interpretation to the claims of the applicant in the remarks.

Regarding the discussion for claim 8 (and dependents), the substance of the applicant's second proposal regarding the claim(s) surrounds the idea that Kawahara is silent about using a timing generator to control the operations of multiple sensor chips. However, in the previous office action it was discussed how Kawahara discloses a timing generator, providing a clocking signal to each of the first and second contact

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image sensor modules (fig. 1b discloses a clk (clocking signal) being provided to each of the plurality of linear image sensors (first and second contact image sensor modules. It is inherent that the clock signal come from somewhere; the clock signal may be said to come from a timing generator.), for providing a start pulse into the first contact image sensor module to trigger a first document reading session thereof and output a first scanned image signal ((col. 2, lines 5-10, fig. 1a-1b, disclose a start pulse input SI.) It is inherent that the start pulse come from somewhere. The start pulse may be said to come from a timing generator. As a box may be drawn around anything and given a name, the start pulse and the clock signal may both come from the timing generator.) From this, it detailed how a start pulse and clock signal are provided. As a titular box may be drawn around anything, the source of the start pulse and the clock signal (whether combined or originating from a singular pre-defined source) may be called a timing generator. In addition, at least a start pulse is a control signal for triggering the modules. A first start pulse goes in a first module and then would cause the next module to start, as previously discussed in the prior office action ((figure 1b, col. 2, lines 1-17 disclose start input si and output so. Fig. 1b shows the so from a preceding sensor acting as a start pulse for the following sensor.) Thus, even though a direct limitation of "using a timing generator to control the operations of multiple sensor chips" is not written in the claim, such an idea is still provided for as at least a start pulse provides a controlling effect. In addition, the limitations of the claim (in context of the discussion of the previous office action) provided for the specifically-delineated limitations of the claim.

Regarding the discussion for claims 36 & 37 (and dependents), the substance of the applicant's proposal regarding the claim(s) surrounds the idea that the limitations of the claims are not provided for. However, the modifications to the claim do not present much difference from the prior presentation, and thus, similar interpretations from the references read on the newly-amended claims. As the applicant merely claimed that the limitations were not taught, and discussion of how the limitations are taught is provided in the rejections of the respective claims above, the examiner refers the applicant there for further reference.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakagawa et al. (US 6348962) discloses simultaneously scanning both sides of a document with two sensors face to face.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM C. STOREY whose telephone number is (571)270-3576. The examiner can normally be reached on Monday - Friday Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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